

# NEWEST SCIENTIFIC DISCOVERIES & REMARKABLE FACTS

## HERE'S the LATEST in FIRST AID METHODS

THE recent perfection of the Schaefer, or prone pressure method, is probably the best discovery in the science of first aid, or resuscitation from suspended animation. In previous years many made unconscious by an electric shock, or asphyxiated by fumes of gas, were pronounced dead after a hasty examination and no attempt at resuscitation. Consequently many cases of this kind were lost, owing to the inability of the physician and fellow workmen to administer the proper treatment.



With the development and practice of the prone pressure method, many of these lives can be saved. It is an unfortunate fact that over ninety per cent of physicians and employees of electrical and manufacturing concerns are entirely ignorant of the prone pressure method. When the occasion demands it, they are utterly unable to give any assistance to the patients and much valuable time is wasted in awaiting one who understands the method. Therefore it is very important that the men who are employed at dangerous occupations, such as miners and linemen, be instructed in what to do if an accident does happen.

Several men in every department of a company should be chosen to work upon the patient—immediately after the accident has happened, as time cannot be wasted in awaiting the arrival of a physician or a machine used for the purpose. The men should be drilled to have perfect team work, to act instantaneously and to work with ceaseless energy for hours if necessary. Many a life has been saved after three or four hours of hard work.

The purpose of the prone pressure method is to induce artificial respiration.



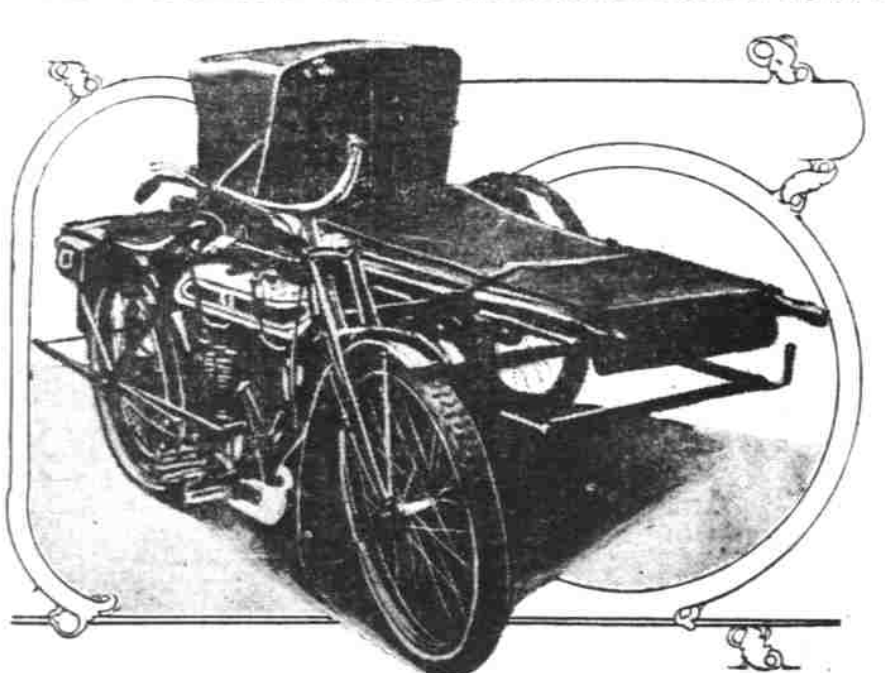
FIG. 2—EXPIRATION, PRESSURE ON

until the brain recovers its normal action. In case of smothering or drowning the blood rushes to the large vessels in the region of the abdomen which causes an anemia of the brain, which in turn causes an interference of the action of the heart. To restore the normal action of the heart, artificial respiration must be adopted. With the returning regularity of the heart beats will come the gradual recovery of the functions of the brain. The prone pressure method consists in simply moving the body so that it will undergo the same actions it undergoes when the person is breathing. This action will reduce the blood in the abdominal vessels and cause the normal flow throughout the veins and gradually the brain will resume its normal conditions and the victim will be restored to consciousness.

## LATEST Is Pneumatic SCENERY

PNEUMATIC scenery and stage settings are now being used in an endeavor to make them more realistic and at the same time conserve the portableness and convenience of the present type of flat and built up paper and wood forms. This is made of a rubberized fabric and so arranged that it may be inflated quickly and moved about with ease. The idea has been worked out in reproducing trees upon the stage, with the result that they appear very real from a short distance. A very large oak tree may be collapsed and packed in a small space for shipment.

## MOTORCYCLE Ambulances Now!



THE uses for a motorcycle are unlimited. They are used as pleasure vehicles, for delivering messages, packages and lately are developing into useful conveyances for heavy loads, as they are built more powerfully and with more endurance each succeeding year. The last word in usefulness is their adoption by several European nations as conveyances for the wounded in battle.

## The DUMDUM Bullet as SEEN by the SCIENTIST

SINCE the outbreak of the European war, charges and counter-charges to the effect that the different armies are using the so-called "dumdum" bullets have been almost a daily occurrence. In a recent article Dr. Haydn Brown, of England, who as an army surgeon saw service on the battlefield in former campaigns and has made a collection of dumdum bullets, describes the various kinds of these deadly missiles.

To begin, the term dumdum may be applied to any bullet which does not make a clean passage through any part of the body it strikes, but expands, splits up into several parts or "mushrooms," increasing the havoc wrought in the wound and making a larger hole at the exit than at the entrance.

The most common kind of dumdum bullets are the soft-nosed type. These are used very extensively by sportsmen in target practice because when they hit the protection shields at the ranges they flatten out and fall harmlessly to the ground instead of penetrating the shield. Dr. Brown points out in this connection that owing to the fact that such bullets are used extensively in time of peace by sportsmen, it is very likely that men of all armies are likely to have them in their possession while franc-tireurs, or citizens who fire on the troops indiscriminately, probably would be able to purchase these bullets and use them, perhaps unwittingly.

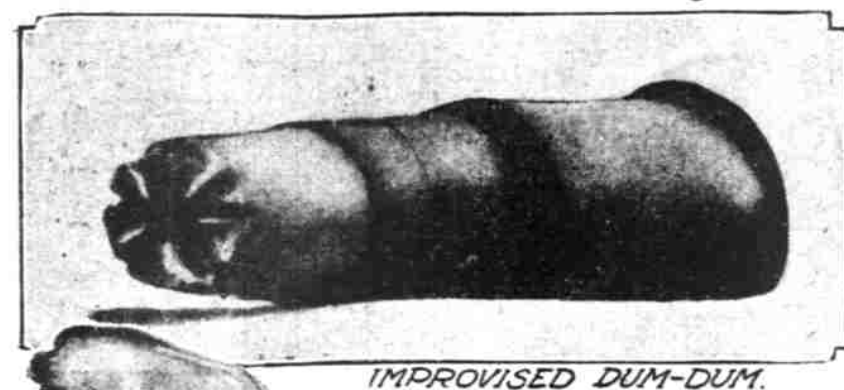
Another very common type of the dumdum projectile is that in which the bullet is hollowed out at the free end. This type, like the soft-nosed kind, flattens out or "mushrooms" on coming in contact with an object and of course in the case of hitting a human target goes tearing its way through the flesh, leaving terribly lacerated wounds. The hollow type is used a great deal in revolvers or automatic pistols by sportsmen. A very cruel type of the dumdum bullet at short range is the conical shaped kind. This bullet appears to be sharpened to a very fine point. The reason it is so disastrous in its effect is because distribution of weight throws the bullet out of balance so that it goes wobbling through the air. To correct this form, it is necessary to increase the weight at the tip and decrease it at the base without changing the shape or carrying power.

The most deadly and cruel of all the dumdum bullets is the type which soldiers improvise while lying in the trenches. This kind is made by notching an ordinary bullet across the nose with deep furrows. In nearly every instance this notched bullet will split on hitting its target.

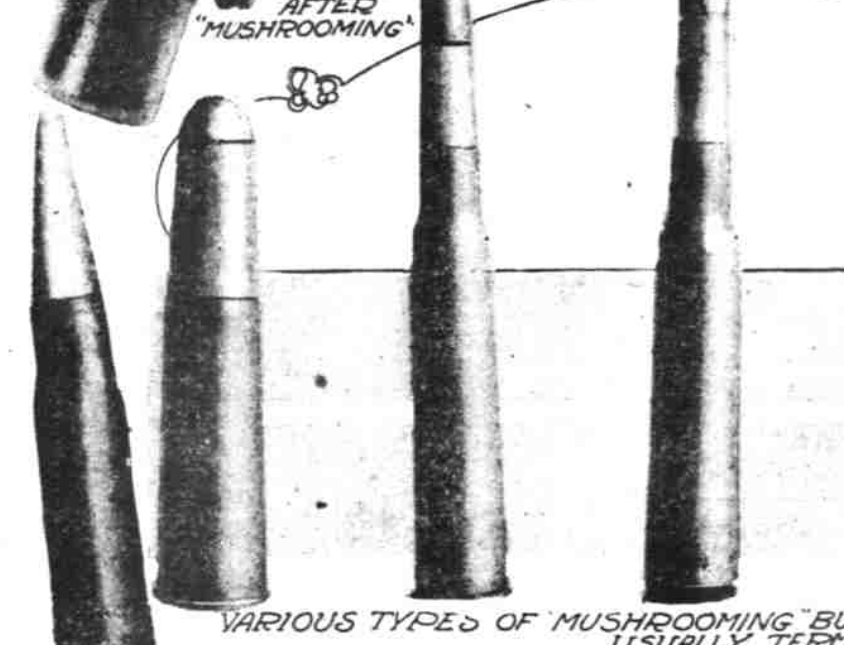
Shrapnel shell also has a dumdum effect. Irregular in shape and rough at every point, the shrapnel most generally works with awful effect, producing a wound very similar to that of an ordinary dumdum.

It was the British troops in India that first brought into use the dumdum bullets. In the petty wars on the northwest frontier of India British soldiers were often exposed to night attacks in camp by fanatic swordsmen known as Ghazis, or fighting dervishes, and it was found that the rush of men of this sort at close quarters was not to be stopped by the needle-like prick of the modern rifle bullet, and that it was absolutely necessary to make the bullet more effective in these special circumstances. This was done by removing from the nose of the bullet a small portion of the nickel mantle that covers it. The effect of this was to make the lead spread out from the diameter of a lead pencil to that of the old-fashioned musket ball, and had a sufficiently stopping effect. The British troops, however, never used the bullets anywhere except in the circumstances related.

The name dumdum is derived from the town of Dumdum, four and a half miles from Calcutta, where the bullets were first manufactured. Dumdum, which has been described as the Woolwich of India, and was for a long time the headquarters of the local artillery, was, it is interesting to note, the center of the first open manifestation against



IMPROVISED DUM-DUM.



VARIOUS TYPES OF "MUSHROOMING" BULLETS, USUALLY TERMED "SOFT-NOSED."



POINTED BULLET.

greased cartridges in the Sepoy mutiny in 1857. It is pointed out, however, by F. C. Selous, the famous big-game hunter, whose knowledge of rifles and shooting is probably unequalled, that the new

pointed bullet, itself a German invention, and now for the first time employed in warfare in western Europe, inflicts at short ranges more grievous wounds than any form of soft-nosed expanding bullet.

These pointed bullets, it seems, are apt to turn sideways on striking a man or an animal at short range, with the result that although the hole caused by the entry of the bullet is small, round, and clean-cut, the skin is often torn open where they pass out on the other side. Mr. Selous relates how on several occasions he has found one of these long, solid pointed bullets, absolutely unimpaired in shape, lying broadside under

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## SOLDIER May Carry HIS OWN Anesthetic

THAT each soldier carry his own anesthetic for use to deaden pain in case he is wounded in battle is one of the suggestions made by an English journal. The discovery of the anesthetic was made by Professor Schleich and the description of it is as follows:

"It consists of two parts of ethyl-chloride, four parts of chloroform, and twelve parts of sublimic ether. This mixture boils at a very low temperature; in fact, at the normal temperature of the human body. If any one claps a glass containing it in his hand for a few minutes it boils gently. The patient inhales the vapor of the boiling liquid and quickly it produces freedom from pain—then sleep. If the phial be held under his nostrils so that he continues to inhale the vapor, his sensory nerves are blunted, he becomes anesthetized.

"Professor Schleich insisted that there is no danger in using the mixture. Its simplicity and harmlessness, therefore, he considered, recommend its use in war.

"Each soldier could be provided easily with a small quantity of the liquid in a suitable tube, which he could use for himself until he found himself in the surgeon's hands. No overdose would be possible, because the soldier would fall asleep first, and the tube would drop from his hand."

## Glass Eyes Are Scarce

GLASS eyes are getting scarcer and higher in price, wholesale dealers say, with no prospect of an increased supply while the war continues. The authorities in the trade say that more than three hundred thousand people in this country wear glass eyes and keep on buying them from time to time, as the eyes usually wear out within a year or two.

New York is the center of the trade in this country. The wholesalers there say that all of their imported eyes are from Germany. The importers also manufacture eyes in New York, but all of the material used in making the eyes includes special qualities of clear and colored glass which are combined in the process of manufacture in order to imitate as closely as possible the appearance of natural eyes. No shipment of eyes or material for eyes has been received since the war began. The present supply of manufactured eyes, the wholesalers say, will last only a few months.

## Pumping by Explosions

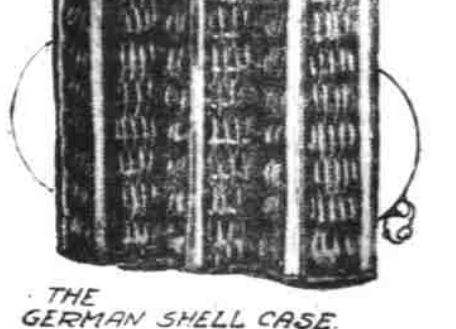
PUMPING water by explosions, with an explosion pump, will be the method employed by the Egyptian government in draining a lake of Egypt, near Alexandria. When the plant is completed it will be the largest pumping installation in the world. There will be eighteen pumps, each capable of a delivery of 100,000,000 gallons of water per day, to a height of about twenty feet.

The pump works automatically, at a rate of about ten explosions per minute. There are no pistons or other moving parts, as in the common type of water pump. The water is raised by the resulting gas pressure within an explosion chamber; the chamber is then emptied of the products of the burned gases, and the next charge is compressed for firing by the incoming water.

## HOW Germans CARRY SHELLS

HOW the German army is able to handle the tons and tons of ammunition which it is using in the great war is a mystery to laymen who are unacquainted with the 100 per cent efficiency of the Kaiser's military machine.

The "panier," or carrying basket, will give a hint as to how shells, powerful enough to wreck a great building, are carried without danger and in such a way that they are immediately available for service and may be transported from point to point with ease and dispatch. The paniers are skillfully constructed wicker cases, made to hold three thirteen-pound shells in separate tubes. The baskets are so carefully woven that the shell fits into them as neatly as into the breech of the gun. A lid of sheet iron, which is held in position by straps, keeps the shells from dropping out. A strong handle completes the outfit.



THE GERMAN SHELL CASE.

## WHO the COSSACKS Are Is CAUSE of Much CONTROVERSY

MORE controversy has probably arisen in regard to the origin of the name Cossack than in connection with any other word in the world's languages. The name of Russia's famous soldiers has been variously derived from words meaning, in distinct languages, an armed man, a sabre, a river, a goat, a promontory, a coat, a cossack, and a district in Circassia. By

some people Cossacks are held to be Tartars, and are regarded as such in more than one sense of the word by their enemies. But they usually claim to be pure Russian stock, and point proudly to the fact that they fought for Russia as far back as the tenth century, and were known as a powerful military confederacy for hundreds of years later.

There are really two main types of Cossacks—one known as the Little Russians, and the other as the Don Cossacks, the latter being the better and more enlightened type. Both the Little Russians and the Don Cossacks, however, who together number about 1,600,000 men, are born soldiers and splendid fighters. A certain number follow agricultural pursuits, while in some of the isolated Cossack villages on the outposts of Russia, Central Asia and Caucasus they gain a livelihood by fishing. Every-

thing, however, is sacrificed by the Cossacks in order to be skillful swordsmen and horsemen.

They are capable of doing anything in the saddle. Cowboys, hunters, or circus riders are not in it with these amazing riders, and in peace times they amuse themselves by such feats as leaping from the saddles while the horses are going at full gallop, and then remounting, springing from one horse to another, riding double, snatching a man from the ground supposed to be wounded, and picking up coins as they hang head downwards from the saddle while the horse is traveling at full speed.

The Cossacks, by reason of their military prowess, have for centuries past lived on land granted them by the Russian government as part payment for the military service required of them. They are liable for military service for life

from the age of nineteen. They provide their own horses and equipment, and for the first two years are trained at their homes. Then they enter what is known as the "first category" regiment of their district, in which they remain for four years.

These regiments are permanently embodied and may be employed in any part of the empire. The men then pass to the "second category" regiment for another four years, and to the third for a similar period. Finally there is a period of five years in the reserves, which fills casualties in time of war; but every Cossack, up to any age, can be called out at a time of emergency to assist in the national defense.

Railways in Great Britain kill in accidents for which the passenger is in no way responsible one passenger for every 72,000,000 carried, while those of the United States kill one for every 4,900,000 passengers carried.

In one of the mines of South Africa 160-horsepower is recovered by making use of the fall of water which is piped from a distance for various purposes in the mine.

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In Cambodia and other parts of Indo-China where the spread of the water hyacinth has seriously interfered with navigation of the rivers an effort has been made to solve the problem by endeavoring to find some use for the plant, and with this end in view chemists and students have been encouraged to investigate the problem. A French professor named Perrot has extracted the fiber from the plant, and finds that after drying, preferably by a gradual process, it can be made into a serviceable rope and twine, as well as coarse thread suitable for matting and sail cloth.

## O. K. for LIGHTNING Rods

PEOPLE who have had the sad experience of having their houses or barns burned to the ground, caused by a bolt of lightning, and who had so-called lightning rods to protect them, will naturally call all such rods a fraud. But two Canadian professors have come to the aid of the lightning rod by gathering data of the number of buildings destroyed, how many carried rods, and of how the rods were made and attached to the buildings.

A large majority of the buildings

struck had no rods and the remainder, the protected buildings, carried the cheapest type of rod. The flourishing industry of manufacturing these rods has been crushed by the fraudulent agents who have put out an absolutely worthless lightning rod. In defense of the scientific fact that rods of the right construction do protect buildings from thunderbolts, these professors have made their researches and have exposed the fake methods of the concerns which operate not for the good of the public but for their own private interests.

## How Aeroplane Aviators Signal

THERE has been tried in France an apparatus for signaling from aeroplanes used in the war, consisting of a reservoir of lampblack, which is connected with a supply of compressed air.

The aviator, by means of a valve within reach of his hand, can blow out a cloud of lampblack of a size varying according to the length of pressure of his hand upon the valve. These small clouds can be seen from a distance of six miles, and the movement of the aeroplane spaces them sufficiently to prevent them running together.

By the use of the Morse code it is an easy matter to send signals in this way from an aeroplane, and in addition it saves the necessity of a wireless receiving station, which is often difficult to operate during a campaign.

## YOUNG Hens Lay 2-Yolk Eggs

FROM time to time a chicken fancier finds an egg with a double yolk in his chicken house and regards it as a freak of nature. That such an egg is reasonably common has been discovered by scientific poultrymen. Pullets new at laying, according to M. R. Curtis of the Maine Agricultural Experiment station, supply eggs with more than one yolk. About 20 per cent of the pullets, beginning to lay before the age of seven months, produce one or more eggs with a double yolk. Mature birds seldom produce the abnormal eggs, while no one bird ever lays more than a few of them. More than 3,000 birds were under observation at the Maine station, but in six years only three eggs of three yolks were laid.

A sidecar containing an ambulance stretcher is attached to the machine, said stretcher being removable so that it can be taken to any part of the field of battle. Much time is saved by using this conveyance as it can be driven by many places that an automobile cannot penetrate, and as much more ground can be covered in less time than a wagon or a corps of men afoot could do.